

FSK SMD TRANSMITTER

868.30 MHz

Product Code: 32001372



DESCRIPTION:

Ultra-compact quartz-stabilized FSK transmitter with **LCC form factor (10.2 x 17 mm)**.

HIGHLIGHTS:

Small size and low profile allows easy integration on designs with small footprint constraints.

Module behavior can be customized through a sequence of commands.

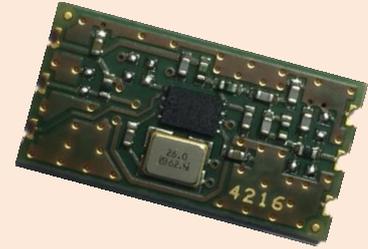
The main editable parameters are: operating frequency, output power, etc.

The module meets all the requirements in the **industrial temperature range -40 / 85 ° C**.

Developed according to **ETSI EN 300 220** European Standard.

The module meets with the Radio Equipment Directive **(RED) 2014/53/EU**.

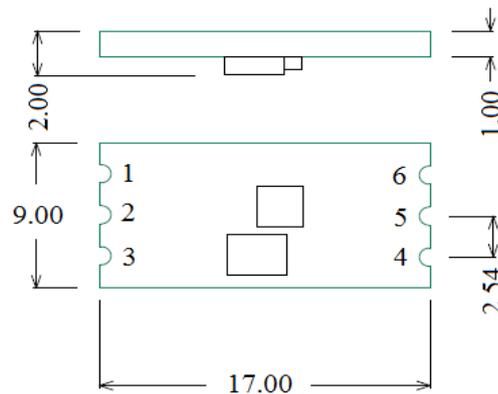
Compliant with **REACH** and **RoHS** directives.



APPLICATIONS:

Alarm systems, window sun blinds, gate control, lighting, thermoregulation, home automation, industrial controls, etc.

MECHANICAL CHARACTERISTICS



Pin functions:

- 1 = Vcc
- 2 = Connect to Vcc (see application note)
- 3 = Tx DATA
- 4 = GND
- 5 = RF output (50 Ω)
- 6 = GND

ALL DIMENSIONS ARE IN MILLIMETERS

GENERAL TOLERANCE +/-0.1MM

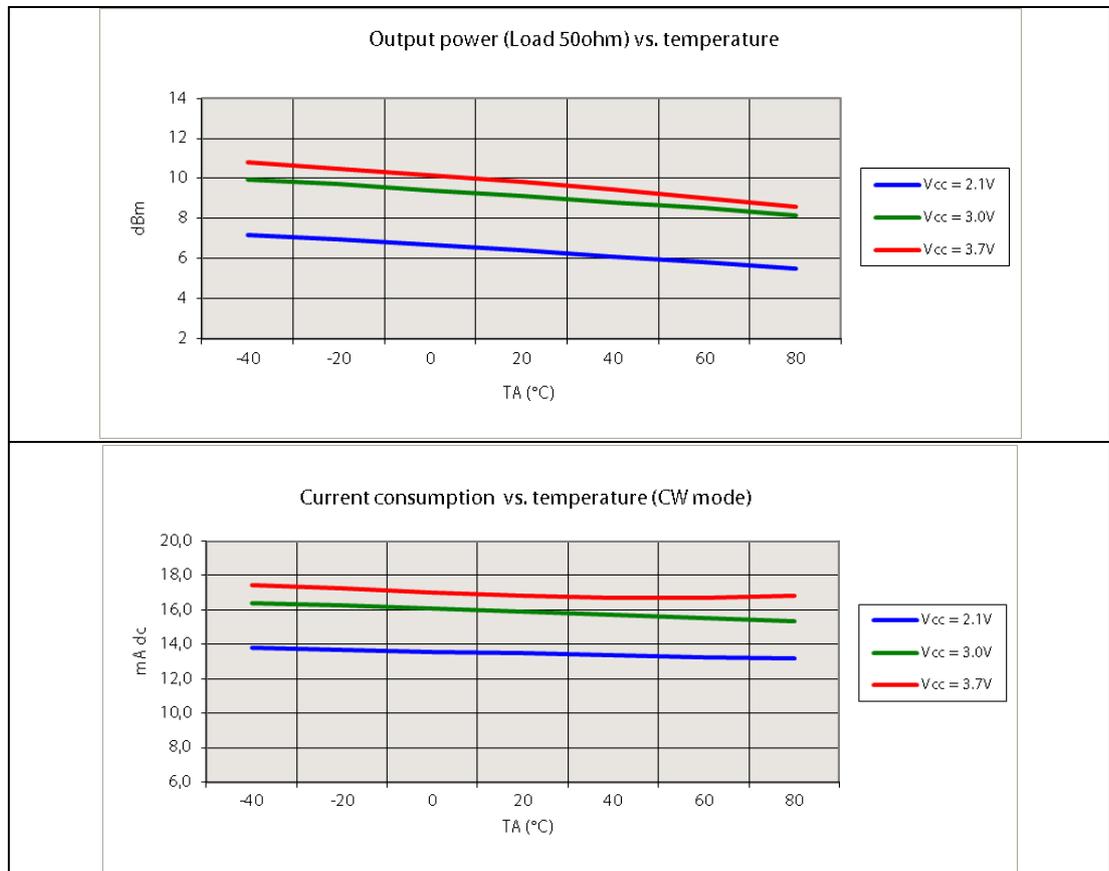
ABSOLUTE MAXIMUM RATINGS

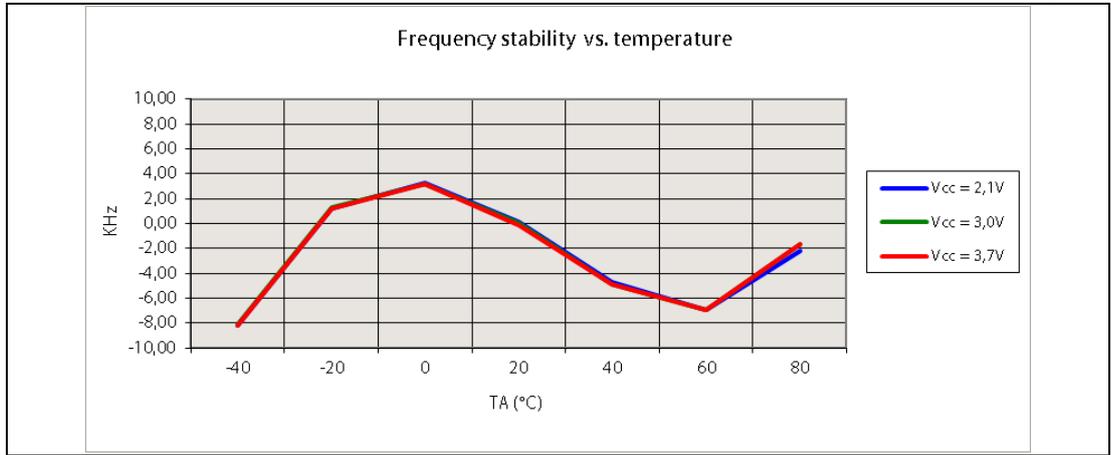
Supply voltage, +Vcc, pin 1:	-0.5 ÷ 3.9 V
Pin 2 – 3 level to GND:	+Vcc
Storage Temperature (escl. package):	-55 ÷ 150 °C
Storage Temperature (incl. package):	-10 ÷ 65 °C
Operating Temperature:	-40 ÷ 85 °C
Load capacitance on input pins 2 and 3	25 pF

ELECTRICAL CHARACTERISTICS @ 25 °C					
Parameter	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage (+Vcc)	2.1	3.0	3.7	V	
Current Drain	-	16.0	-	mA	
Sleep Current	-	200	-	nA	1
Operating frequency	-	868.30	-	MHz	
Frequency accuracy	-	±20	-	kHz	
Occupied Band Width	-	-	20	kHz	
Operating Channel Width	-	-	600	kHz	5
Output power (on 50-Ω load)	-	10	-	dBm	
Output Impedance	-	50	-	Ω	
Wake-up time (TS_TR)	-	650	2000	μs	2
Start-up time (T_START)	-	1300	-	μs	3
Turn-off time (TOFFT)	-	2	-	ms	4
Baud rate	500	-	38400	Baud	
Output Logic low	-0.5	-	0.2 x Vcc	V	
Output Logic high	0.8 x Vcc	-	Vcc	V	

TYPICAL CHARACTERISTICS (*)

Note: All RF parameters measured with input (pin 3) connected to a 50-Ω impedance signal source or load.





(*): All graphs must be considered as indicative typical results in accordance with temperature variation.

Note 1: +V_{cc} = 3 V, 1.2 kHz square wave modulation 0-3 V, duty cycle 50%, logic "1" = 3 V.

Note 2: Time required to switch from sleep mode to valid data transmission.

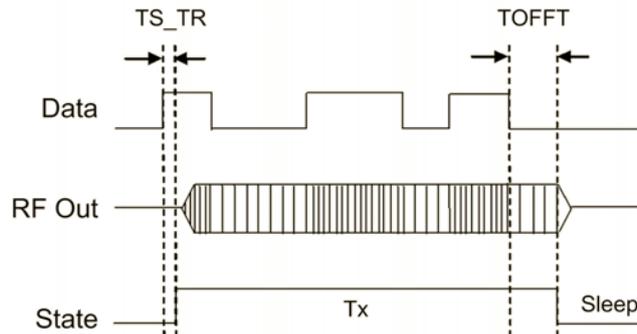
Note 3: Time by application of the power supply (+V_{cc}, pin 1) to valid data transmission.

Note 4: Time by the end of a data transmission (valid data on TX DATA pin) to sleep state.

Note 5: ERC RECOMMENDATION (70-03) Annex1 band h1.5.

TRANSMISSION MODE

Starting from sleep state, a rising edge on TX DATA pin activates the transmitter awakening process. The TX DATA pin must be kept high for a period equal to the wake-up time (TS_TR) before sending the data to be transmitted. After this interval, the transmitter is ready to send data on TX DATA pin.



The transition from transmission to sleep state is handled automatically: the module waits for TOFFT idle time⁽⁴⁾ on the pin TX DATA before returning to the sleep state.

APPLICATION NOTE

PIN 2 must be connected to V_{cc} for normal operation.

Module can be used in "extended" mode via a sequence of commands sent on pins 2 and 3.

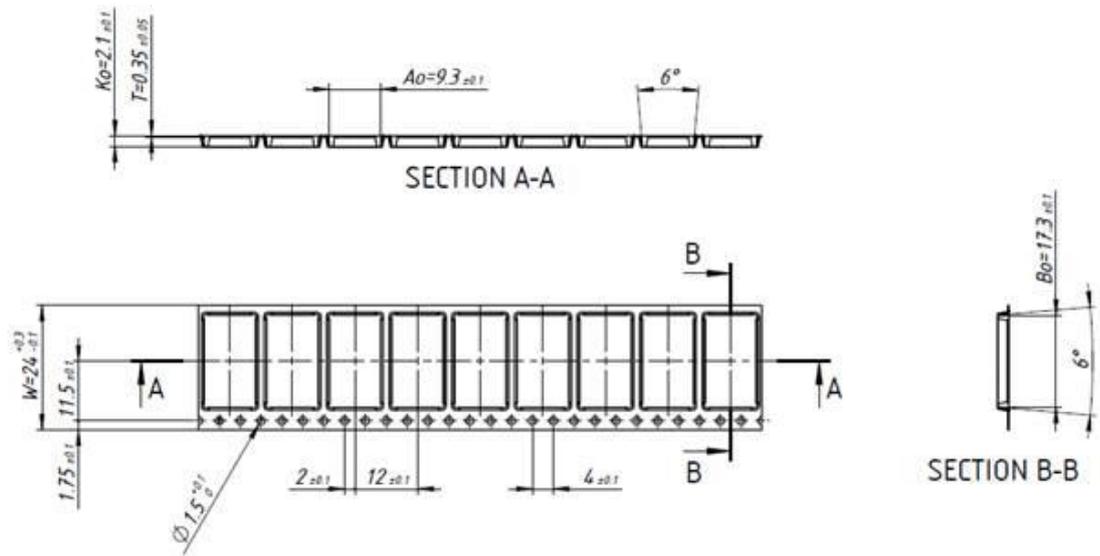
The main parameters are:

- **Operating frequency;**
- **Output power;**
- **Modulation (OOK, FSK).**

For details on using Extended Mode, refer to AN004.

DELIVERY

32001372 modules are delivered in tape/reel packaging including 250 units.



STORAGE AND HANDLING

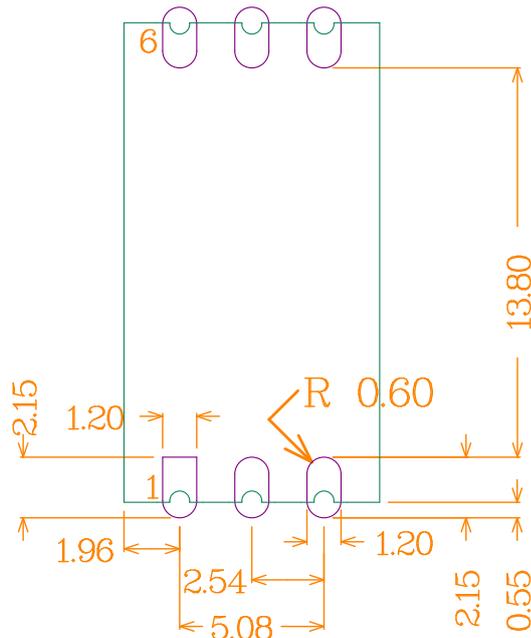
Moisture Sensitivity Level (MSL)

The 32001372 is qualified for **MSL level = 1**; therefore, in accordance with IPC / JEDEC J-STD 020 specification, it is classified as non-sensitive to moisture and does not require dry pack.

SOLDERING INFORMATION

Soldering pad pattern

The finished surface on the printed circuit board pads should be made of Nickel/Gold.
The recommended soldering pad layout on the host board for the 32001372 is shown in the diagram below (purple lines):



All dimensions in mm.

Via-holes and wires are not allowed on the PCB-surface layer occupied by the module.

Mipot S.p.A. reserves the right to modify the specifications without notice

Cormons, October 25th, 2020

Solder paste

32001372 module is designed for surface mounting using half-moon solder joints (see diagram below). For proper module assembly, solder paste must be printed on the target surface of the host board. The suggested solder paste height should be within 150 µm and 180 µm.

The following diagram shows mounting characteristics for Module integration on host PCB:



Placement

The 32001372 module can be automatically placed on host boards by pick & place machines as any integrated circuit.

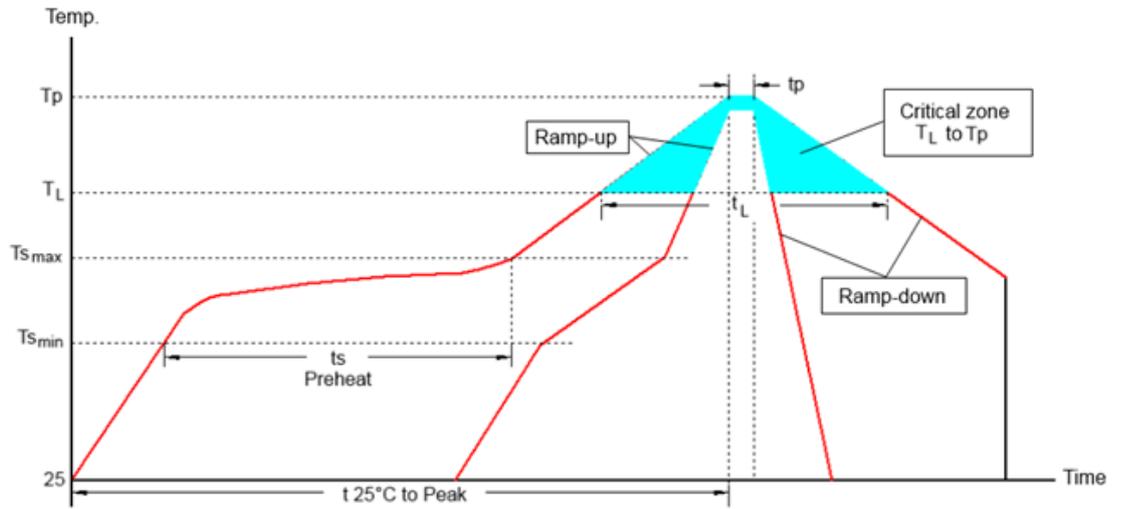
Soldering Profile (RoHS process)

It must be noted that 32001372 module should not be allowed to be hanging upside down during the reflow operation. This means that the module has to be assembled on the side of the printed circuit board that is soldered last.

The recommendation for lead-free solder reflow in IPC/JEDEC J-STD-020D Standard should be followed.

Profile Feature	Sn-Pb Assembly	Pb-Free Assembly
Average Ramp-UP Rate (T _s max to T _p)	3 °C/s max	3 °C/s max
Pre-heat		
- Temperature Min (T _s min)	100 °C	130 °C
- Temperature Max (T _s max)	179 °C	217 °C
- Time (t _s min to t _s max)	80 ÷ 135 s	80 ÷ 135 s
Time maintained above:		
- Temperature (T _L)	183 °C	220 °C
- Time (t _L)	30 ÷ 90 s	30 ÷ 90 s
Peak / Classification Temperature (T _p)	Max. Peak Temp. 220 °C	Max. Peak Temp. 250 °C
Time within 5 °C of actual Peak Temperature (t _p)	10 ÷ 15 s	10 ÷ 15 s
Ramp-Down Rate	4 °C/s max	4 °C/s max
Time 25 °C to Peak Temperature	6 min. max	8 min. max

Note: All temperatures refer to the top side of the package, measured on the body surface.



REVISION HISTORY

Revision	Date	Description
1.2	25-10-2020	Final release